

Date: Wednesday, 3/26/2008 1:26:41 PM
 User: Kim Johnston

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: ROUND BILLET 17-4
Job Number	: 38214		
Estimate Number	: 11990		
P.O. Number	:	Part Number	: D6104011
This Issue	: 3/26/2008 S.O. No. :	Drawing Number	: D6104 REV B
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: / / Type : PURCHASED PARTS	Drawing Revision	: B
Previous Run	:	Material	:
Written By	:	Due Date	: 4/4/2008 Qty: 10 Um: Each
Checked & Approved By	: <u>Kim Johnston 03/26</u>		
Comment	: Est. A 02.12.02 New Issue KJ/RF		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0

PG

PURCHASING



Comment: PURCHASING

Issue P/O: 5994

C 208/03/26

a) Description: S.S round billet

b) Ø6.50" x 4.100" long

c) Tolerance on all dimensions are +0.030"/-0.000"

d) Material: 17-4PH Stainless steel

e) Min UTS = 170 KSI (38 HRc)

Material certification required

(10)

2.0

D6104011P

17-4 SS Roundbar 6.50"OD



Comment: Qty.: 1.0000 Each(s)/Unit Total: 10.0000 Each(s)
 17-4 SS Roundbar 6.50"OD

3.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure material certification is attached

Kim Johnston 03/26 (10)

4.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK:

Ensure Material certification comply to Dwg D6104

Kim Johnston 03/26 (10)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 3/26/2008 1:26:41 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ROUND BILLET 17-4

Job Number: 38214

Part Number: D6104011

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: _____

CZ08/08/27 @

6.0

QC21

FINAL INSPECTION/W/O RELEASE



08/08/27 MF

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



MF 08-08-27

Form: process

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

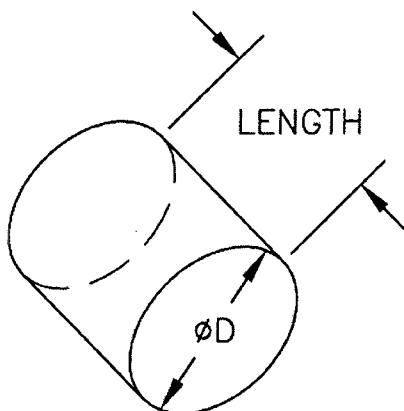


DESIGN RF	DRAWN BY 	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 	APPROVED 	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29

SPECIFICATION CONTROL DRAWING



MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 38214

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**VALBRUNA**

SLATER STAINLESS, INC.
2400 Taylor Street West, P.O. Box 630
Fort Wayne, Indiana USA 46801
Phone: 260-434-2892 Fax: 260-434-2905

Product Certification ReportReport Number: **4259400**

60977

Certified on Feb 26, 2007 Page 1 of 1

Order I.D. 0700005 014		Order Date 1/02/07		Commodity Code			
Dim 1 5.2500	Dim 2 .0000	Dim 3 .0000	Heat I.D. 418929	Customer I.D. 002476	Customer Purchase Order 612001744		
Product Shape Rounds			Product Surface HR & Rough Turned			Customer Grade 630	
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 405015	Weight			

**Ship
To**

Attention: KEVIN MACNEIL
VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1

**Sold
To**

VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1

Lifts: 0060**CONDITION A****EN 10204 3.1B****UNS S17400****ASTMA 564-04****ASMESA 564 01 ED 2002 ADD****AMS 5643Q****CHEMICAL ANALYSIS**

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.038	.69	.022	.022	.37	15.57	4.71	.16	3.35	.05	.26	.001	.26

HB**341****TENSILE PROPERTIES****CAPABILITY**

HB	TS (PSI)	.2%YS (PSI)	%EL(2")	%RA	AGE(F)
428	204000	184900	15.4	53.3	900

MAGNETIC PARTICLE TEST**FREQ SEV****AVG .07 .05****MACRO ASTM E340/E381****MACRO****OK****OK****OK****PERCENT FERRITE****% FERRITE****AVG .5**

No welding or weld repair done.

Material when shipped is free from contamination by mercury, radium, alpha source, and low melting elements.
Melted in Italy per DFARS clause 225.872.Chemical testing performed to one or several of the following ASTM methods: E415, E572, E1019, E1085, E1086.
No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications.

Quality system is compliant with ISO 9001:2000. Produced in accordance with EN 10204 3.1B.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services


Dennis Hackett

**ELECTRALLOY**

175 Main Street
Oil City, PA 16301
PHONE: 814-678-4200
Fax: 814-678-4146

**MATERIAL CERTIFICATION
REPORT and CERTIFICATE
OF QUALITY CONFORMANCE**

63181

Zys

This document shall not be reproduced, except in full,
without the written approval of Electralloy

CUSTOMER NAME AND ADDRESS

ASA Alloys, Inc.
81 Steinway Boulevard
Etobicoke, Ontario M9W 6H6
Canada

CUSTOMER ORDER NO. 068331-CV
IDENTIFICATION Heat #45730

PRODUCT DESCRIPTION Stainless steel bar, electric arc furnace melted, A.O.D. refined
press forged, solution annealed, water quenched, bar peeled,
with saw cut square ends

SPECIFICATIONS

Type 17-4 (UNS S17400) - ASTM A564/A564M-04, AMS 5643Q, ASTM A705/A705M-95,
Grade 630 ASME SA-564/SA-564 2004 Edition ASTM A484/A 484M-06b,
ASME SA-705/SA-705M 2004 Edition, NACE MR0175/ISO 15156-3:2003(E).
and any additional specifications which may be
listed below.

CHEMICAL ANALYSIS

Heat Number	C	MN	P	S	SI	CR	NI	MO
45750	0.044	0.59	0.019	0.001	0.56	15.34	4.55	0.16
	CU	CB	TA	CBTA	N	CO	V	
	3.31	0.30	0.01	0.31	0.036	0.03	0.04	

ITEM DESCRIPTION

Heat Number	HWRR	Quantity & Weight	Size
45750-2A		1 Bar - 1,870 Lbs	Nom 6.50" Rd x 195.93" Lg

BRINELL/ROCKWELL

Heat Number	Test Loc	Brinell
45750-2A	TOP	341

PASS/FAIL TESTS

Heat Number	Macro Etch								
45750-2A	P								

Note: The recording of false, fictitious, or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute.

The above are true and correct results of tests on samples of the material. Results conform to the specification(s) listed above and are on record.

Meets EU Electrical "RoHS".
Contains NO "WEEE" relevant substances.
Complies with DFARS-225.1-Buy American Act-Supplies.

By

Date: 03/07/08

HWRR = Minimum Hot
Working Reduction
Ratio.

Name : David A. Fulkerson

Title: QC Technician/Works Inspector

**ELECTRALLOY**

175 Main Street
Oil City, PA 16301
PHONE: 814-678-4200
Fax: 814-678-4146

**MATERIAL CERTIFICATION
REPORT and CERTIFICATE
OF QUALITY CONFORMANCE**

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without the written approval of Electralloy

CUSTOMER NAME AND ADDRESS ASA Alloys, Inc. 81 Steinway Boulevard Etobicoke, Ontario M9W 6H6 Canada		CUSTOMER ORDER NO. 068331-CV IDENTIFICATION <u>Heat #45730</u>
PRODUCT DESCRIPTION Stainless steel bar, electric arc furnace melted, A.O.D. refined press forged, solution annealed, water quenched, bar peeled, with saw cut square ends		

CAPABILITIES ANALYSIS FOR CONDITION: H900

TENSILE PROPERTIES

Heat Number	Test Dir	Test Loc	Tensile (PSI)	.2% Yield (PSI)	Reduction (%)	Elong 4D (%)
45750-2A	LT	TOP	199200	176240	45.1	13.3

BRINELL/ROCKWELL

Heat Number	Test Loc	Brinell
45750-2A	TOP	415

MICRO-STRUCTURE

Heat Number	Spher (%)	Decarb (In)	Ferrite (%)
45750-2A	N/A	N/A	0.00

STATEMENTS

Material represented was melted and manufactured in the USA

All items represented are in full compliance with all purchase order and specification requirements.

At time of shipment, items and/or material produced under this order have not come in contact with mercury or its compounds.

Material represented was not weld repaired.

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The above are true and correct results of tests on samples of the material. Results conform to the specification(s) listed above and are on record.

Meets EU Electrical "RoHS".
Contains NO "WEEE" relevant substances.
Complies with DFARS-225.1-Buy American Act-Supplies

By

Date: 03/07/08

HWRR = Minimum Hot Working Reduction Ratio.

Name : David A. Fulkerson

Title: QC Technician/Works Inspector

**ELECTRALLOY**

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Oil City, PA 16301
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STATEMENTS

Material represented was solution annealed at 1925 deg. F +/- 25 deg. F
held 30 minutes per inch of thickness and water quenched

Material represented was produced in accordance with the Electralloy
Quality Control Program dated 09/26/2006, which meets the requirements of
ISO9001(2000), MIL-I-45208A and ASME Code Section 3, Subsection NCA 3800

ASTM E1019-03, ASTM E572-02a, and ASTM E1086-94, are the methods
used to determine the chemical analysis for Fe base (high alloy),
Ni base and Cu base alloys.

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or entries on this document may be
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Federal Statute.

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of tests on samples of the material.
Results conform to the specification(s)
listed above and are on record.

Meets EU Electrical "RoHS".
Contains NO "WEEE" relevant substances.
Complies with DFARS-225.1-Buy American Act-Supplies.

By

Date: 03/07/08

HWRR = Minimum Hot

Working Reduction
Ratio.

Name : David A. Fulkerson

Title: QC Technician/Works Inspector